An Extended Polythiophene with Interesting Core Synthesis

Significance: A novel extended polythiophene derivative 4 was synthesized \((M_n = 18 \text{ kDa}, \text{PDI} = 2.3)\). The key step in the monomer synthesis \((1 \rightarrow 2)\) is accomplished in 78% yield by a novel base-induced cyclization.

Comment: The authors attempted to synthesize a homopolymer of the brominated analogue of 3 via a nickel-catalyzed dehalogenation, but a soluble polymer could not be obtained. The optical and electronic properties of 4 were found to be very similar to those of poly(3-hexylthiophene).